



Educational Topic

Computer Software Engineer

Related Job Titles:

Computer Programmer, Computer Scientist, Systems Analyst, Programmer/Analyst, Quality Assurance Engineer, Technical Writer, Web Designer, Database Administrator.

Job Description:

A software engineer writes the software that is used in automated systems. Automated systems help people do their jobs by providing them with information, giving them advice, performing repetitive tasks or in some cases, by controlling actual systems. The computer software contains the instructions that tell the system what to do. The first job of a Software Engineer is to understand the tasks that are going to be automated. Then, a Systems Analyst will decide how the automation system can assist or enhance the performing of those tasks. After that the software engineer, usually working in a team, will create programs to perform the functions desired by the users of the system. The software engineer will test the system to make sure it works the way it is supposed to work.

Interests / Abilities:

- Do you like logic puzzles and games?
- Can you patiently sit for hours while trying to figure something out?
- Do you enjoy working on a team?
- Is it easy for you to identify the steps it will take to do or make something?
- Do you enjoy building things and seeing them operate?
- Do you think it's fun to "play with numbers" while solving complicated equations?

Suggested School Subjects / Courses:

- Math
- Science
- Statistics
- English
- Computer Programming
- Electronics

Education / Training Needed:

For most programming jobs, a Bachelor of Arts or Science is sufficient if in a technical field. For other jobs, a Masters or Doctorate in Computer Science or Electrical Engineering may be required. Some companies will hire people with little education or experience and train them in computer programming. Often times, the ability to learn and to think logically and creatively is more important than formal education or training. The ability to communicate ideas and understand those of others is also important when working as a member of a team, so English and public speaking are valuable skills.

Areas of expertise:

- Computer programming languages
- Operating systems
- Application programming
- Distributed computing
- Networking
- Databases
- Graphical user interfaces
- Statistics
- Numerical computing
- Real-time computing

Additional Resources:

- Association for Computing Machinery (ACM)
<http://www.acm.org/>
- Software Development Forum
<http://www.sdforum.org/>
- American Institute of Aeronautics and Astronautics
<http://www.aiaa.org/>
- Junior Engineering Technical Society
<http://www.jets.org/>
- Student Educational Employment Programs
http://nasajobs.nasa.gov/stud_opps/employment/index.htm
- NASA Jobs
<http://nasajobs.nasa.gov/>
- NASA Summer High School Apprenticeship Research Program (SHARP)
<http://www.mtsibase.com/sharp/>

What can I do right now?

- Get access to a home/school/library computer and software that will let you write your own programs.
- Write some simple programs.
- Join a computer club.
- Sign up for computer or programming classes.
- Read magazines like *MacWorld*, *Byte*, *PC World*.

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- Please take a moment to evaluate this product at:
 - http://ehb2.gsfc.nasa.gov/edcats/educational_topic
 - Your evaluation and suggestions are vital to continually improving NASA educational materials.
 - Thank you.
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<http://quest.nasa.gov/people/index.html>

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ET-2002-09-121-ARC